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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/764,254 | 01/19/2001 | Takemi Hasegawa | 50212-186 | 5674 |

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WASHINGTON, DC 20005-3096

EXAMINER

PRASAD, CHANDRIKA

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2839

DATE MAILED: 08/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/764,254

Applicant(s)

HASEGAWA ET AL.

Examiner

Chandrika Prasad

Art Unit

2839

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The reply filed on 7/7/03 consists of amendments to claims 1, 3, 15 and remarks related to rejections of claims. The claims are not allowable as explained below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1-4 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Unger (4,691,991) in view of DiGiovanni et al (5,802,236).

Unger (Figures 1-5) shows a single-mode optical fiber having a core region 12 and a plurality of cladding regions 14, 16, 18 surrounding the core region forming a multi-fold rotational symmetry (plurality of concentric regions) wherein the refractive indices of the cladding regions are different and the refractive indices of several regions are lower than those of the two adjacent regions. Unger shows the refractive index of the core region being greater than that of the cladding regions. Unger discloses that $n_0 > n_2 > n_1$ and $n_2 > n_3$ where n_0, n_1, n_2, n_3 are the refractive indices of the core region and the three cladding regions starting from the innermost cladding region to the outer cladding region as shown in Figure 2. But Unger does not show some of the cladding region having a plurality of sub medium regions with refractive index lower than that of the main medium and a hexagonal structure. DiViovanni (Figures 1-5) shows cladding

regions with sub medium regions (voids) with refractive index lower than that of the main medium (silica) constituting the cladding region. Figures 2 and 5 shows a sub medium having a hexagonal cell 23, 52. Figure 6 shows the chromatic dispersion of the optical fiber at a number of wavelengths. Also see Column 3, lines 12-37, 53-65; Column 5, lines 57-60; Column 6, lines 3-9, Column 6, lines 3-9; Column 7, lines 47-54; Column 8, lines 37-44 and Column 10, lines 1-12 for description.

4. Claims 5-11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Unger (4,691,991) and DiGiovanni et al (5,802,236).

Unger and DiGiovanni show all the features of these claims as described in Paragrap 3 above except specific values or relative values of the refractive indices, certain operating parameters such as optical power and wavelengths and the use of another fiber with positive chromatic dispersion. DiGiovanni discloses the use of another fiber for compensating dispersion to be known. It would have been obvious to one having ordinary skill in the art at the time of the instant invention to provide these features and select certain values and parameters for the Unger fiber as modified by DiGiovanni because it has been held to be within the general skill of a worker in the art to select a known material and operating parameters on the basis of its suitability for the intended use.

Response to Arguments

5. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection. Unger shows a single mode optical fiber

Art Unit: 2839

with a plurality of cladding regions having refractive index lower than those of the two adjacent layers.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bhagavatula also shows a single mode optical fiber with a core and a plurality of claddings similar to that of Unger.

Contact Information

7. Any correspondence to this action may be mailed to:

**Commissioner for Patents
Post Office Box 1450
Alexandria, VA 22313-1450**

Hand-delivered responses should be brought to:

**Crystal Plaza 4, Fourth Floor (receptionist)
2201 South Clark Place, Arlington, Virginia**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chandrika Prasad at (703) 308-0977. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild, can be reached at (703) 308-2710. The fax number for this Group is (703) 872-9318 (general) and (703) 872-9319 for after-final. Any inquiry of a general nature should be directed to the Group receptionist at (703) 308-1782.



**Chandrika Prasad
Patent Examiner
August 1, 2003**